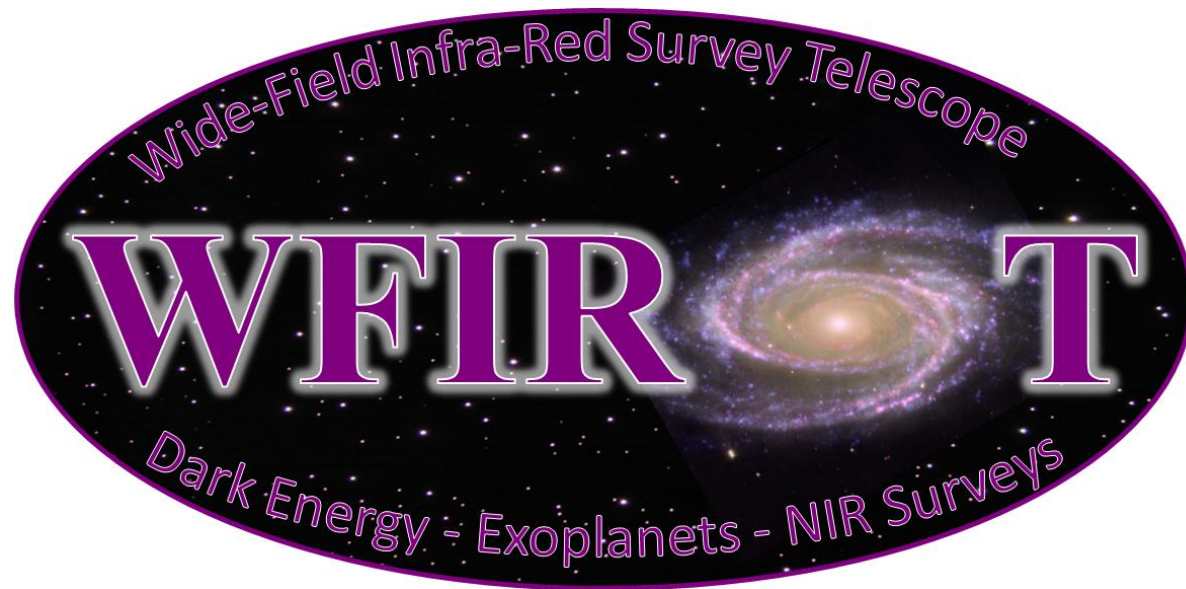


WFIRST

AFTA - Wide-Field Infrared Survey Telescope



Project Overview

Kevin Grady

April 1, 2014

Study Team Overview (1 of 3)

- Budget: great news, FY14 budget augmented on March 5th.
 - Developing detailed plans and schedules for increased activity
 - Significant effort focused on upcoming budget submission
- Design cycle #4 nearing completion
 - Dave will discuss results
- Cycle #3 STOP analysis results and preliminary jitter assessment completed
 - Preliminary assessment of GEO thermal environment. Results favorable for widefield and coronagraph.
 - Early jitter results: initial results meet widefield requirements; the combination of observatory pointing and the coronagraph's LOWFS indicate a jitter level that enables coronagraphy
 - Much effort lies ahead.
- Initiated design and fabrication of key widefield opto-mechanical engineering hardware subassemblies.

Study Team Overview (2 of 3)

- Study charter requested assessment of 2.5 micron cutoff for widefield instrument
 - Telescope subassembly successfully cold tested last year
 - CTE and stress measurements of telescope coupons fabricated along with the original flight units are in process.
 - Cycle #4 examining impact of cryo-cooler to widefield; need to be established after HgCdTe detector recipe is selected and characterization tests performed.
- Developed coronagraph technology development plan; initiated mask fabrication for HCIT testing; working DRM
- Pointing simulation development
 - Closed loop simulation under development to assess pointing stability, slew and settle performance for widefield; fast steering mirror to be incorporated into model to provide assessment of coronagraph jitter performance.
- Requirements development
 - Several discussions on Level 1; will not be baselined now; framework for the level 2 effort for the remainder of this year.
 - Level 2 discussion later

Study Team Overview (3 of 3)

- Payload I&T calibration
 - Maturation of the payload integration approach planned for later this year.
- IR detectors
 - Banded array detectors have been fabricated and are now in test.
 - A few additional detectors in the first two process sub-lots remain for completion, with the third sub-lot close behind.
 - Performance testing of the detectors to continue this year.
 - Goal is to select a single recipe from the first two sub-lots this summer and another opportunity late this CY.
 - Will then fabricate full detector arrays.
- NRC Report Recommendations
 - Aggressively mature coronagraph design/technology and develop cost & schedule. Perform independent coronagraph review.
 - Perform an external technical & cost review.



TASK	2013								2014												2015						
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb					
Observatory Design Reference Development																											
Widefield/Telescope/IC	#4											3/30	#5										9/15				
Coronagraph Design Updates				8/25	3/30											9/15											
Spacecraft Design Updates	3/30											9/15															
Str/Thermal/Optical & Jitter Analysis																											
Models	9/10											11/1	#4		5/15	#5					11/1	#5					
Performance Assessments					12/15					#4		6/30	#5					12/31									
2.5 Micron Cutoff Assessment																											
Telescope AMS Cold Test & Coupon Test	AMS											Coupon CTE											3/27				
Develop Payload Thermal Design/Model				8/1	11/15											6/15											
Analyze Performance																			12/31								
Coronagraph Architecture Downselect																											
Analyze Options & Select	#1 7/23 TAC 9/6 #2 9/24 TAC 10/30 #3 10/24 #3.5 12/4 TAC Report 12/9 12/13 HQ																										
Observatory Pointing Analyses																											
Develop Control ACS Simulation									2/15				5/1				7/15				11/1						
Slew/Settle/Stability Performance											3/15				6/1				8/15				11/30				
Requirements Development																											
Level 1's			KO			9/9	11/10			SDT		1/10	2/11		4/15												
Level 2's					1/15							4/15				7/15				10/15				12/15			
Instrumentation Science Simulations																											
Refine Operations Concept	3/31											11/30															
Develop P/L Level GSE Rqmts & Test Flow																											
Requirements												5/1				10/15											
Develop Test Flow												7/1				10/15											
Develop GSE Concept Options															8/1								12/15				
Calibration Instrument																											
Requirements															7/30				11/30								
Develop Conceptual GSE Designs																	8/30				11/30						
Update Mission Schedule & LCC																			12/30								
IR Detector Development																											
Fabrication & Assembly	9/30											5/1				6/15											
Test & Characterization								12/1		1/30		4/30				6/30				8/31							
Coronagraph Technology												Tech Plan				1/30		HCIT1 Ready		4/11		HCIT 2 Ready				8/8	